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| 09/272,404      | 03/19/1999  | HIDEYUKI MIYATA      | 1344.1021/PI        | 5584             |

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EXAMINER

BELLO, AGUSTIN

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 03/25/2004

29

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/272,404

Applicant(s)

MIYATA ET AL.

Examiner

Agustin Bello

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,5-8,11-20,22-29,31,33,35 and 37-39 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1,5-8,11-20,22-29,31,33,35 and 37-39 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 23.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 5-8, 11-12, 15-20, 22, 25-29, 31-33, 35, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcuse (U.S. Patent No. 5,608,561) in view of Clow (U.S. Patent No. 6,005,890).

Regarding Claims 1, 11, 12, 22, 26, 27, 31, 33, and 39, Marcuse teaches an apparatus comprising: an optical transmitter comprising a light source emitting a light (reference numeral 120 in Figure 1B), a modulation signal generator (reference numeral 150 in Figure 1B) generating an electrical modulation signal having a corresponding rise time and fall time (inherent), an adjusting circuit (reference numeral 160 in Figure 1B) adjusting at least one of the rise time and fall time of the electrical modulation signal (column 3 lines 18-36), and a modulator (reference numeral 130 in Figure 1B) modulating the emitted light with the adjusted electrical modulation signal, the optical transmitter transmitting the modulated light to an optical transmission path (reference numeral 140 in Figure 1B). Marcuse differs from the claimed invention in that Marcuse fails to specifically teach a receiver receiving the transmitted, modulated light through the optical transmission path wherein the adjusting circuit adjusts at least one of the rise time and fall time in accordance with characteristics of the modulated light at

a receiver. However, one skilled in the art would clearly have recognized that in order to maximize the benefit of the transmitter taught by Marcuse, it would have been beneficial to monitor the transmitted signal at a receiver, using the information observed at the receiver to make adjustments at the transmitter, thereby allowing the transmitted signal to be optimized for the transmission path. Furthermore, Clow teaches a monitoring and feedback system wherein the transmission of a signal is monitored at a receiver, wherein the information obtained is used to make adjustments to at least one of the rise time and fall time in the system via a feedback signal to the transmitter (see abstract), thereby optimizing the system. This disclosure by Clow would have suggested to one skilled in the art that it would have been possible to have made adjustments to one of the rise time or fall time via an adjustment circuit within the transmitter of Marcuse. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have monitored a signal transmitted to a receiver as taught by Clow to maximize the benefit of the transmitter taught by Marcuse by using the information obtained at the receiver to make adjustments to one of the rise time and fall time in the system via a feedback signal to the transmitter.

Regarding Claims 16, 28, 35, and 37, the combination of Marcuse and Clow teaches or suggests an apparatus wherein the optical transmitter comprises: a light source emitting a light (reference numeral 120 in Figure 1B of Marcuse); a modulation signal generator generating an electrical modulation signal having a corresponding rise time and fall time (reference numeral 150 in Figure 1B of Marcuse); an adjusting circuit adjusting at least one of the rise time and fall time of the electrical modulation signal (reference numeral 160 in Figure 1B, column 6 lines 9-18) in accordance with the characteristics of the modulated light received at the receiver through

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an optical transmission path (as would have been suggested to one skilled in the art as discussed in claim 1); and a modulator modulating the emitted light with the adjusted electrical modulation signal (reference numeral 130 in Figure 1B), to thereby produce said signal light having at least one of the rise time and fall time of the signal light adjusted (column 3 lines 18-36).

Regarding Claims 6 and 18, the combination of Marcuse and Clow suggests an apparatus as in claims 1 and 16, but differs from the claimed invention in that Marcuse fails to specifically teach that the adjusting circuit lengthens both the rise time and the fall time. However, one skilled in the art would clearly have recognized that one method of lengthening both the rise and fall time of the signal would have been to manipulate the values of the components that comprise the filter matching circuit used by Marcuse (reference numeral 160 in Figure 1B and Figure 2). Furthermore, Clow teaches lengthening both the rise and fall time of an input signal (column 2 lines 6-10). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have lengthened both the rise and fall time of the signal, in order to compensate for the presence of transient noise.

Regarding Claims 7, 17, 19, and 29, Marcuse teaches an apparatus as in claim 1, wherein the adjusting circuit shortens both the rise time and the fall time (column 3 lines 34-36).

Regarding Claims 8 and 20, the combination of Marcuse and Clow suggests the limitations of claim 1 and 16 including adjusting both the rise time and the fall time of a signal. Marcuse fails to specifically teach making the adjustment in order to maintain amplitude deterioration and phase margin of the transmitted signal light within a specific range. However, making adjustments to the rise and fall time of the signal would have inherently resulted in changes to the amplitude deterioration and phase margin of the signal. Furthermore, one skilled

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in the art would clearly have recognized that as a result of the inherent effect on a signal observed by adjusting both the rise and fall time of a signal, maintaining the amplitude deterioration and phase margin of the signal within a specified range since could have been accomplished by trial and error in making the adjustment to the transition time is the signal.

Regarding Claims 15 and 38, the combination of Marcuse and Clow suggests the claimed invention except for having a plurality of said optical transmitters, each transmitting having a respective modulated light having a different wavelength than the modulated lights of the other optical transmitters; and an optical multiplexer multiplexing the modulated lights together into a wavelength division multiplexed (WDM) signal which is transmitted through the optical transmission path. It would have been obvious to one of ordinary skill in the art to have replicated the device of Marcuse so that each of the plurality of lasers produced a distinct wavelength, then multiplexing those distinct wavelengths via a wavelength division multiplexer to produce a wavelength division multiplexed signal, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Furthermore, Official Notice is taken that multiplexing of a plurality of signals having distinct wavelengths is well known in the art and would have been an obvious improvement to the system of Marcuse for one skilled in the art, thereby allowing one skilled in the art to increase the amount of information transmitted.

Regarding Claims 25 and 32, the combination of Marcuse and Clow teaches a filter filtering the electrical modulation signal, but differs from the claimed invention in that the combination of references fails to specifically teach an electrical amplifier amplifying the electrical modulation signal prior to filtering. However, Official Notice is taken that it is well

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known in the art to amplify a signal prior to filtering it. Furthermore, one skilled in the art would have recognized that by amplifying a signal prior to filtering it, the noise along with the signal would be amplified, thereby making it easier for a filter to filter out the noise and output the desired signal. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have amplified the modulation signal prior to filtering it via an amplifier in order to ease the process of filtering the signal.

3. Claims 13, 14, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcuse in view of Clow and Chraplyvy (U.S. Patent No. 5,420,868).

Regarding Claim 13 and 23, the combination of Marcuse and Clow teaches or suggests the limitation of claims 3 and 16, but differs from the claimed invention in that it fails to specifically teach that the modulator modulates the emitted light via one of the group consisting of optical phase modulation and optical frequency modulation. However, such modulation techniques are extremely well known in the art and would have been obvious to one skilled in the art, being that Marcuse teaches modulation of an optical signal. Furthermore, Chraplyvy teaches that it is well known in the art to use phase modulation in a system that modifies a modulation signal (see Figure 1). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modulated the signal emitted by the device of Marcuse according to the phase modulation techniques taught by Chraplyvy.

Regarding Claims 14 and 24, Chraplyvy also teaches a dispersion compensator compensating for wavelength dispersion characteristics of the optical transmission path (reference numeral 19 in Figure 2).

***Response to Arguments***

4. Applicant's arguments filed 11/13/03 have been fully considered but they are not persuasive. The applicant makes the same arguments that were addressed in the previous office action, therefore the examiner's response to the arguments are the same as the response stated in the final office action. The examiner maintains that the combination of Marcuse and Clow would have suggested to one skilled in the art that it would have been possible to adjust the rise time and the fall time of a modulation signal via a feedback signal from a receiver of the transmitted signals. Furthermore, the applicant's argument that the rise time and fall time of Marcuse at fixed after being initially set may be true. However, the examiner maintains that the combination of references would have suggested to one skilled in the art that it would have been possible to adjust the rise and fall time of the modulation signal, according the disclosure of Clow, in order to reduce modulator chirp dynamically as a result of feedback from the receiver.

5. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Therefore, applicant's argument that it would not have been obvious to have adjusted the rise time or fall time in accordance with the characteristics of the signal light at the receiver based solely on Marcuse, is not sufficient to show nonobviousness. Likewise, nonobviousness has not be established by applicant's argument regarding the transmission medium used by Clow.

Applicant argues that the combination of Marcuse and Clow fails to specifically teach the use of an optical transmission path. However, Marcuse clearly teaches the use of an optical



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transmission path (reference numeral 140 in Figure 1B). Although Clow teaches that his system can be used with a “wire” transmission path, Clow also teaches that the type of transmission medium not limiting, thereby suggesting that it could be used with other types of mediums, including an optical medium. Furthermore, the combination of Marcuse and Clow would have suggested to one skilled in the art that it would have been possible to adjust the rise time and fall time of a modulation signal in an optical system.

Applicant argues that Clow fails to specifically teach that a carrier or modulator is involved. However, it is clear that a carrier or modulator is involved according Figures 2-6 which clearly show a modulated signal. Furthermore, the combination of Marcuse and Clow would have suggested that a modulator or carrier be used. Regarding applicant’s argument that Clow fails to specifically teach adjusting the rise time or fall time of an electrical modulation signal, the examiner has relied on Marcuse, not Clow to teach this feature. Clow is relied on for the disclosure of a adjustment feedback signal.

Regarding applicant’s argument that Marcuse should not be combined with the method of adjustment of rise time and fall time of a signal taught by Clow, the examiner has provided motivation for combining the references, namely to improve transmission characteristics of the signal.

6. In response to applicant's argument that Clow and Marcuse are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant’s endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977

F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, it is clear that both Marcuse and Clow are in the field of applicant's endeavor.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

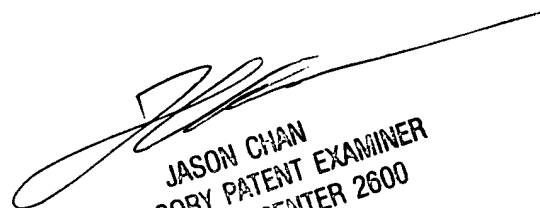
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March 22, 2004



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